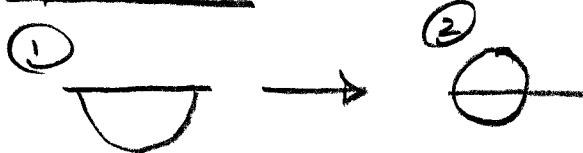


Option 1 - Factory



$$A_1 = \frac{\pi r_1^2}{2}$$

$$A_2 = \pi r_2^2$$

$$A_1 = A_2$$

$$\frac{\pi r_1^2}{2} = \pi r_2^2$$

$$r_2 = \sqrt{r_1^2 / 2}$$

$$= \sqrt{\frac{10.25^2}{2}}$$

= 7.25" radius.

Option 2 - Field.



$$A_2 = A_1 - \text{chord}$$

$$= 165 \text{ in}^2 - 16.54 \text{ in}^2$$

$$= 148.5 \text{ in}^2$$

Before:

Position at D6, $52\frac{1}{2}^\circ \rightarrow 52.5^\circ$

$$A_{eff} = 101 \text{ in}^2$$

$$x = \cos^{-1} 101 / 148.5$$

$$= 47^\circ$$

$\rightarrow -47^\circ$
 5.5°
 \hookrightarrow 1 additional notch (45°)

21" ID pipe.

$$\textcircled{1} \quad 10.25 \Rightarrow 20\frac{1}{2}$$

'4" clearance

$$\textcircled{2} \quad 7.25 \Rightarrow 14\frac{1}{2}$$

$$\frac{21 - 14.5}{2} = 3\frac{1}{4}''$$

$3\frac{1}{4}"$ clearance.

Remove 2", both sides

$$\text{Chord Area} = 16.54 \text{ in}^2$$

$\textcircled{1}$ $1\frac{1}{4}"$ side clearance
 $4\frac{1}{4}"$ tail clearance

$\textcircled{2}$ $2\frac{1}{4}"$ side clearance
 $3\frac{1}{4}"$ tail clearance.